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PHOTOGRAPHIC INTERPRETATION REPORT

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HARDENED COMMAND AND CONTROL FACILITIES
PENZA, USSR

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JANUARY 1967
COPY 116
16 PAGES

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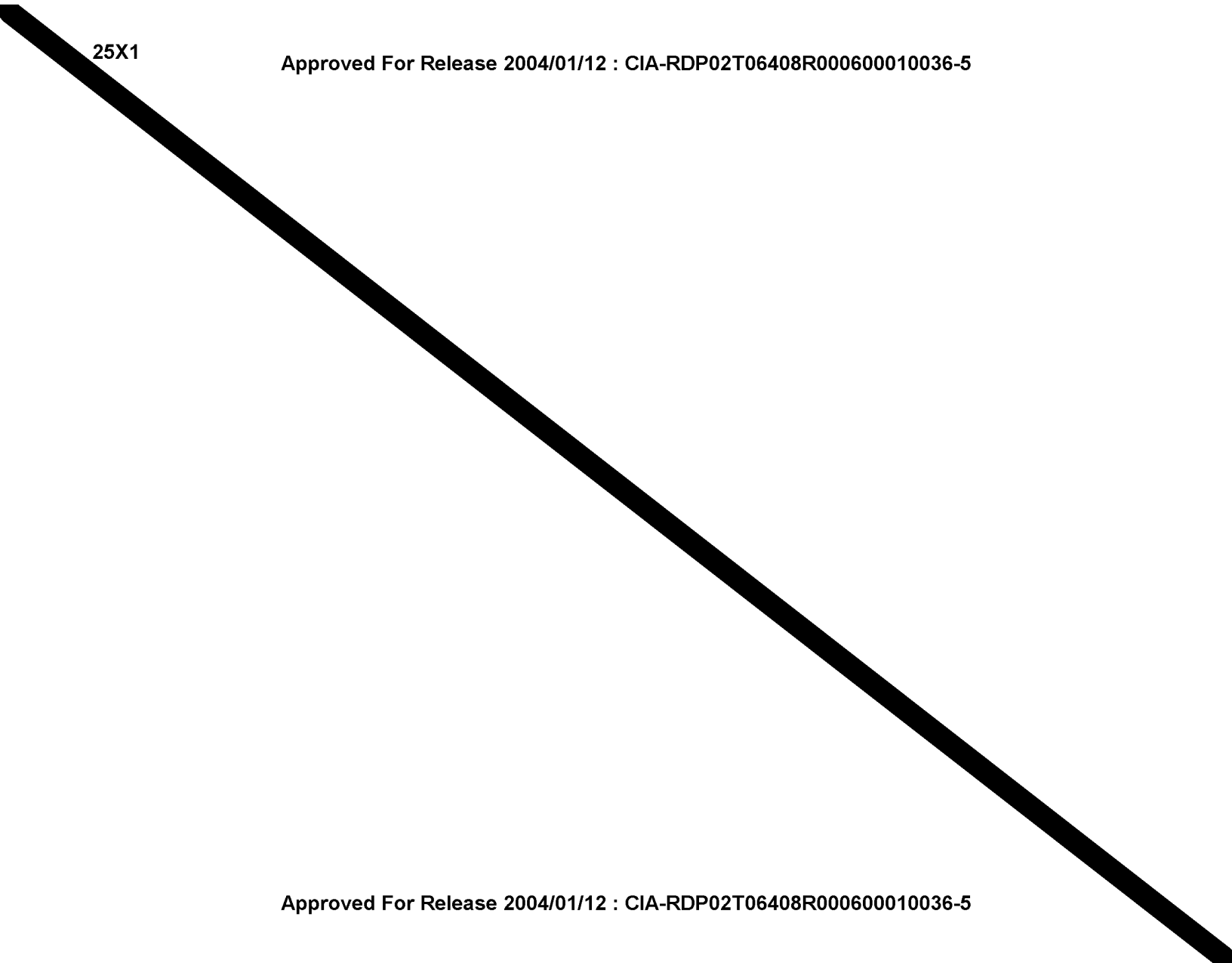

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PHOTOGRAPHIC INTERPRETATION REPORT

HARDENED COMMAND AND CONTROL FACILITIES PENZA, USSR

JANUARY 1967

NATIONAL PHOTOGRAPHIC INTERPRETATION CENTER

SUMMARY

This report presents data on 3 facilities in the Penza area which are considered to be components of an alternate command and control center of national status. Collectively, they are as large as similar facilities previously identified 1/ in the Moskva area.

The facilities described herein are presented under 2 general categories:

1. Command communications facilities, High Frequency (HF) communications facilities which contain earth-mounded control buildings surrounded by hardened (subsurface) antennas and HF antennas from which communications are relayed, and

2. Command/operations or headquarters facilities, hardened command facilities which contain earth-mounded buildings and multistory apartment buildings.

The hardened (subsurface) antenna is one of the primary recognition features for the identification of facilities included in this report. For additional information on these antennas, attention is invited to the previous report. 1/

INTRODUCTION

This report has been prepared in response to NSA requirement NSA/PO432/R148-66 which requests a detailed analysis of available photography to identify HF communications facilities in the Penza Area.

HARDENED COMMAND AND CONTROL FACILITIES, PENZA, USSR

A 25 nautical mile (nm) area was studied on available photography to identify HF communications facilities in the Penza Area, USSR (Figure 1). The following facilities have been identified: Penza HF Transmitting Facility, 14 nm northeast of Penza at 53-21N 045-19E and Penza HF Receiving Facility, 11.5 nm east-southeast of Penza at 53-10N 045-19E. In addition to the Penza HF communications facilities, there is a hardened command and control facility, 43.5 nm east of Penza at Chaadayevka, USSR. This facility is 28.0 nm east of the Penza HF Receiving Facility and 31.8 nm east-southeast of the Penza HF Transmitting Facility.

PENZA HF TRANSMITTING FACILITY

The Penza HF Transmitting Facility (Figures 2 and 3) consists of a secured HF antenna field containing 44 double day/night rhombic antennas and 4 horizontal dipole antennas. A large, low profile, separately secured, earth-mounded control building, [redacted] is in the center of the antenna field. The earth-mounded control building is surrounded by at least 4 hardened (subsurface) antennas which are under construction and are irregular in size and shape.

The 44 double rhombic antennas at this facility apparently are constructed to transmit in 2 directions as shown by the transmission direction switch in the center of each antenna clearing (Figure 2). By utilizing this bidirectional feature of the transmitting antennas, complete coverage of the major population areas of the USSR is possible. The table on Figure 3 presents a list of antenna azimuths. The projected forward and back antenna azimuths are shown on Figure 11. 25X1

Four hardened (subsurface) antennas, 2 of which are paired, are also at the transmitting facility. These antennas are considered to be bidirectional, and have a wide beam angle, thus providing wide angle coverage of the USSR. It is quite possible that additional hardened (subsurface) antennas will be constructed at this facility to complete the pairing, to fill in the gaps in the coverage, and to provide omnidirectional coverage. The table on Figure 3 includes a list of approximate antenna azimuths. Figure 13 shows in red the approximate projected azimuths of these antennas. Only approximate azimuths are possible due to the irregular shape of hardened (subsurface) antenna clearings.

A small secured support area is 4,240 feet south-southeast of the earth-mounded control building of the transmitting facility and contains a total of 13 buildings. Additional small

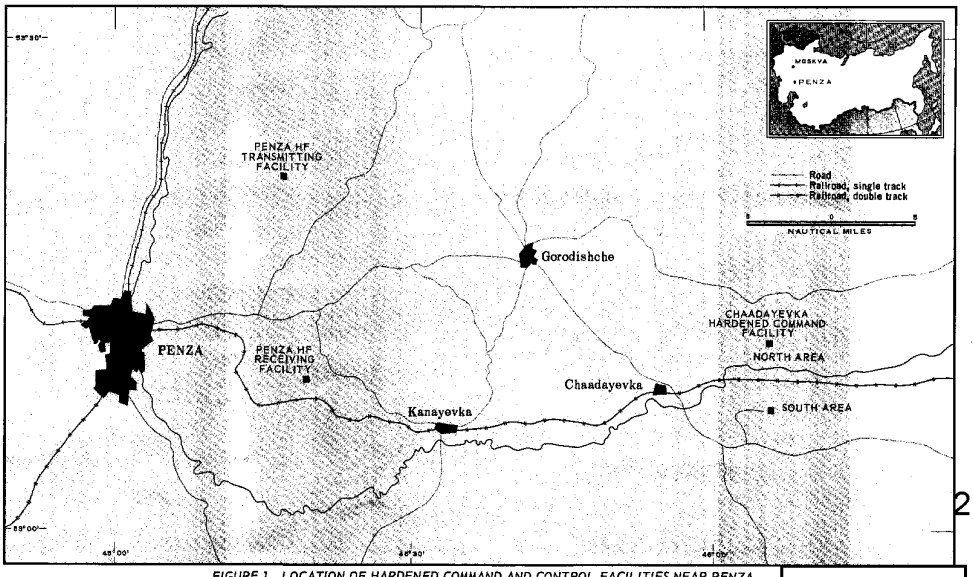

FIGURE 1. LOCATION OF HARDENED COMMAND AND CONTROL FACILITIES NEAR PENZA.

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FIGURE 2. PENZA HF TRANSMITTING FACILITY.

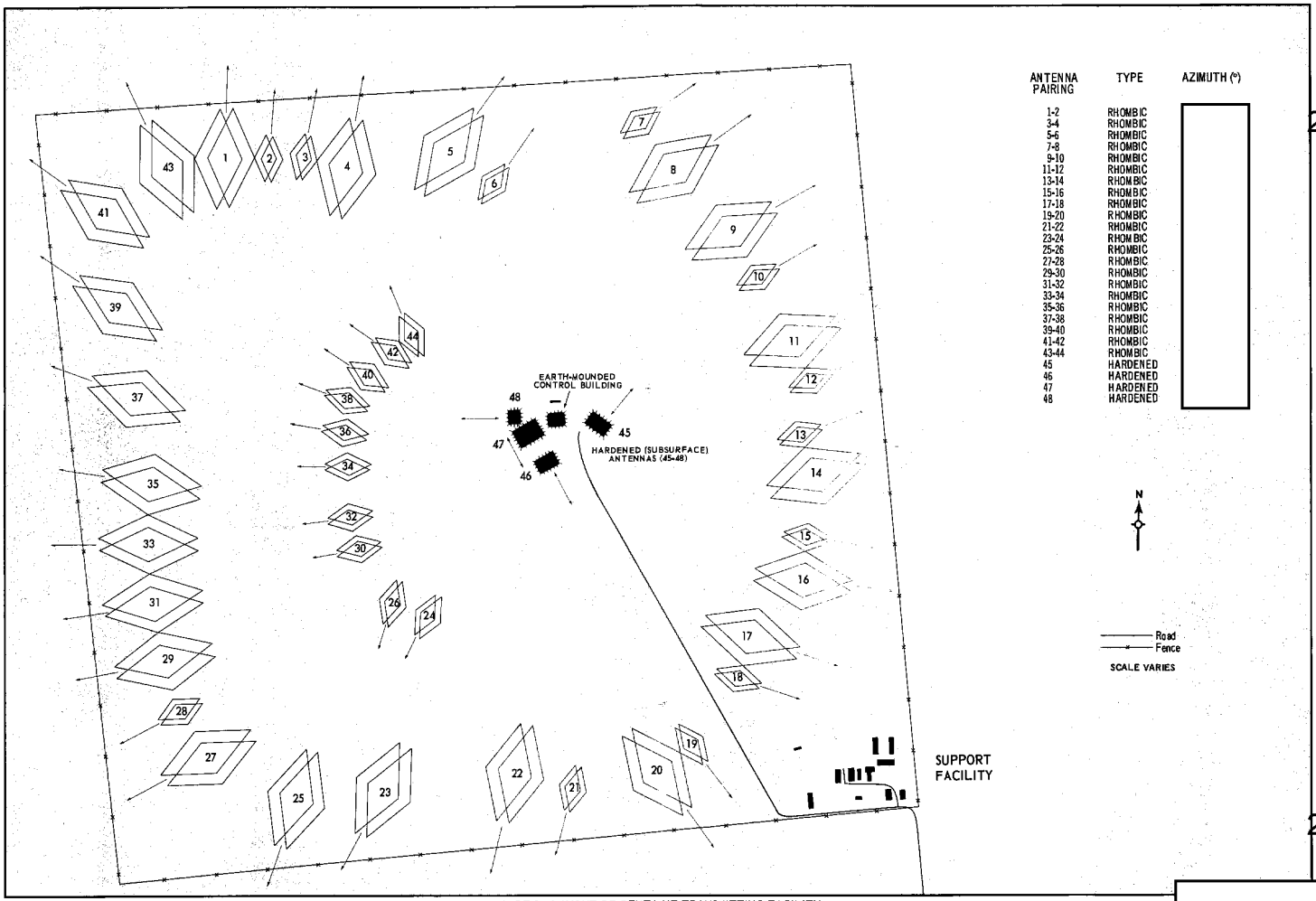

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FIGURE 3. LAYOUT OF PENZA HF TRANSMITTING FACILITY.

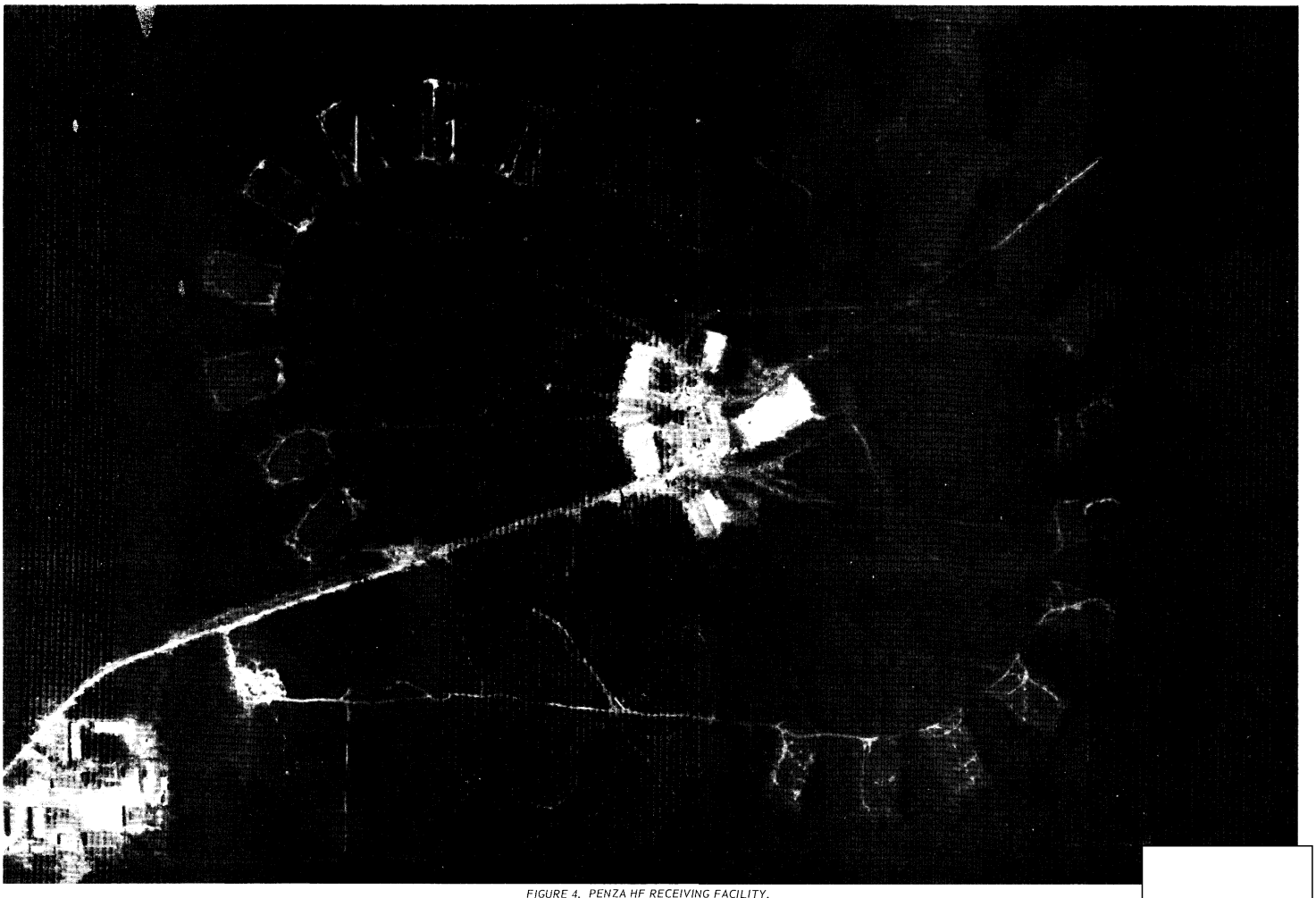

FIGURE 4. PENZA HF RECEIVING FACILITY.

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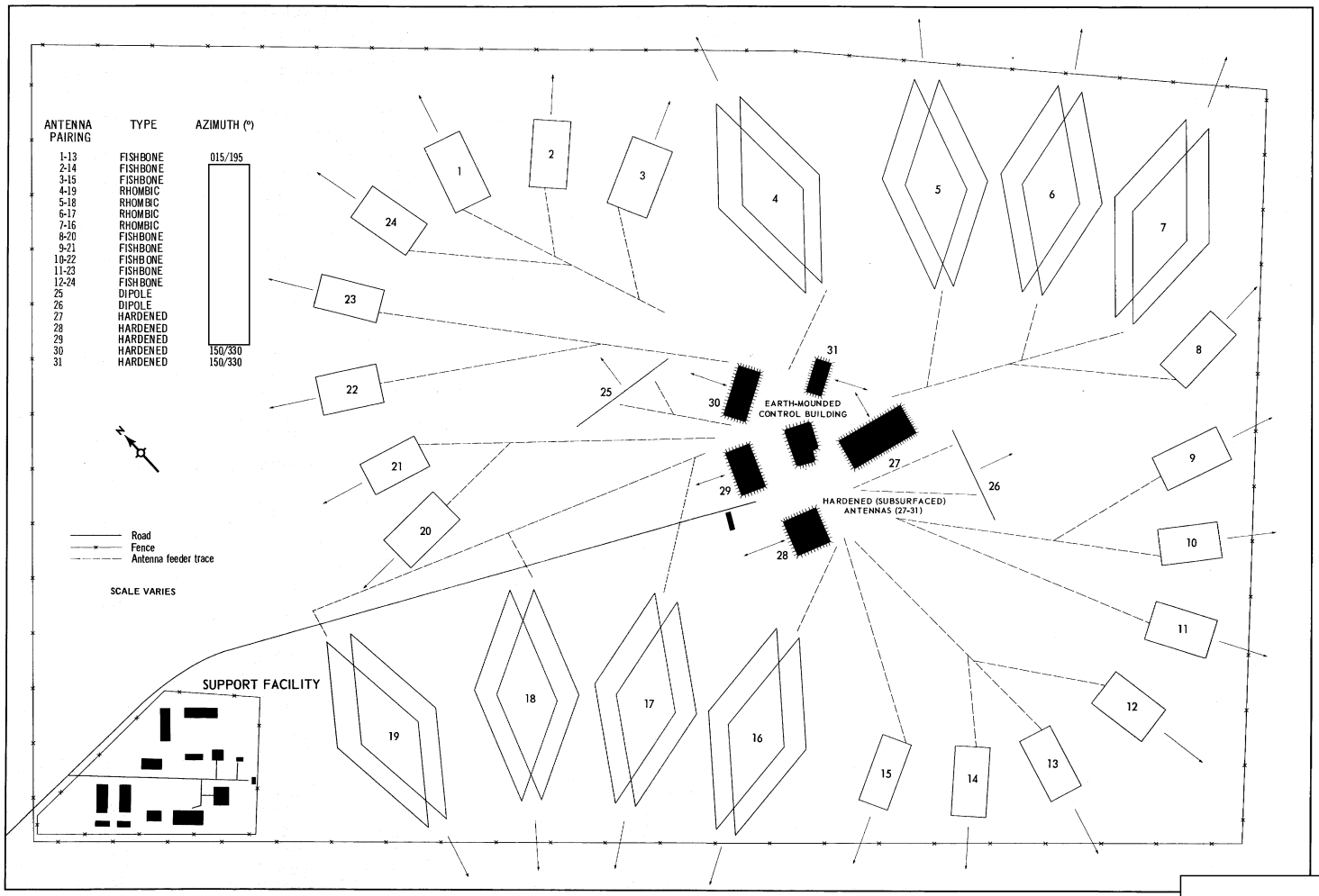

FIGURE 5. LAYOUT OF PENZA HF RECEIVING FACILITY.

sheds and out buildings are partially obscured by the wooded area which surrounds the support area. The support area includes 5 administration/barracks, a possible vehicle/equipment storage shed, and 7 other buildings which fill some logistic function. Several clearings within the support area indicate possible areas of new construction. An area of unidentified construction activity can also be observed near the road, midway between the support area and earth-mounded control building.

25X1 The entire facility can be negated on [redacted] photography of [redacted] The facility was first observed in an early stage of construction on [redacted] photography of [redacted] photography [redacted] shows a substantial amount of construction activity, clearings in the woods for some of the HF antennas, and an area of construction activity for the control building, in the center of the antenna field. Subsequent photographic coverage through [redacted] shows a continuation of construction activity. On [redacted] photography, the control building appears to be complete and earth covered. Several small rectangular objects are on the top of the low-profile, earth-mounded control building and are probably ventilators of some type.

Construction of the hardened (subsurface) antennas was underway at the time of [redacted] and appear as irregular areas. Three rectangular holes with small square objects in their centers were observed near the center of each hardened (subsurface) antenna. The hardened (subsurface) antennas were apparently in a mid-stage of construction and the objects inside the holes may be electrical components of the antenna array. These objects have not been observed at other facilities where hardened (subsurface) antennas have been seen under construction. The typical pattern of parallel antenna elements which has been reported at other facilities 1/ has not been observed. It would appear that the final mounding and general clean up around the control building and hardened (subsurface) antennas is not complete. Several more hardened (subsurface) antennas appear to be under construction as indicated by several irregular areas near the control bunker which are being cleared.

PENZA HF RECEIVING FACILITY

The Penza HF Receiving Facility (Figures 4 and 5) consists of a secured HF antenna field containing 8 double rhombic antennas, 16 fishbone antennas, and 2 dipole antennas with a large low-profile, separately secured, earth-mounded control building, [redacted] in the center of the antenna field. The earth-mounded control building is surrounded by 5 hardened (subsurface) antennas which are under construction.

The numerous antennas at this facility form a circular pattern and appear to be capable of receiving HF communications from the major populated areas of the USSR. The forward and back azimuths of the antennas are shown in the table on Figure 5 and on Figure 12. [redacted] photography of [redacted] ground scars were observed through the center or major axis of half of the antennas. This may indicate that the antennas are to be used in pairs to provide better reception, utilizing the space diversity principle. If this is the case, then approximately 180 degrees of coverage is available. However, it is possible that the antennas facing west are used singly or can be switched and paired with antennas on the other side of the site to provide better reception for signals received from the eastern areas of USSR.

Five hardened (subsurface) antennas, four of which are combined in 2 pairs, are within the receiving facility. Additional hardened (subsurface) antennas may be constructed to complete the pairing and to fill in gaps in coverage. The antenna azimuths are shown in the table on Figure 5 and on Figure 13. These azimuths are approximate and only give the general orientation, due to the irregular shape of the antenna clearings.

A small secured support area is 3,860 feet northwest of the earth-mounded control building and contains a total of 15 major buildings and several small sheds. These structures include 4 barracks/administration buildings, a possible equipment/workshop building, and 9 other buildings which support some logistic function. An area of unidentified construction activity is along the road, halfway between the earth-mounded control building and the support area.

The entire receiving facility can be negated on [redacted] The facility was first observed in an early stage of construction on [redacted] shows additional construction activity with clearings in the woods for some of the rhombic antennas, and construction activity in the center of the antenna field for the control building. Subsequent photographic coverage through [redacted] shows construction continuing. The control building in the HF receiving facility appears to be externally complete and an earth cap is over the control building. Several rectangular objects are on the top of the earth-mounded control building and are probably ventilators. At this time, 5 hardened (subsurface) antennas appear to be in a mid-stage of construction. However, there are no rectangular objects on the top of the hardened (subsurface) antennas similar to those observed on the hardened (subsurface) antennas at the transmitting site. The typical pattern of 16 rows of parallel antenna elements observed during the construction stages of most hardened (subsurface) antennas has not been observed at this facility. Mounding of the hardened (subsurface) antennas and mounding of the control building has not been completed.

CHAADAYEVKA HARDENED COMMAND FACILITY

The Chaadayevka Hardened Command Facility, 6.5 nm east of Chaadayevka (Figure 1), consists of 3 areas including a construction/support area, a north bunker area, and a south bunker area (Figures 6 through 10).

The construction/support area is served by 9 rail sidings which are connected by a single track to the Penza-Syzran double-track rail line. The area contains a large concrete batch plant, at least 5 warehouse buildings, numerous support buildings, and open storage. At the southwest end of this area is a housing section which contains 14 multistory apartment buildings, and at least 7 administration/support buildings.

The 2 operational parts of this facility are a north and a south bunker area. They contain a total of 7 large bunkers, 8 multistory apartment buildings, and 2 heating and power plants, one in each of the areas. Two of the bunkers in each area are each adjacent to 2 multistory apartment buildings. These facilities appear to be connected to the heating and power plant in each area by an underground steamline. The north and south areas are separately secured, and a gate house is at the entrance to each of these areas. The entire facility is served by a central service road which connects the 7 bunkered areas and the construction/support area. Additional structural de-

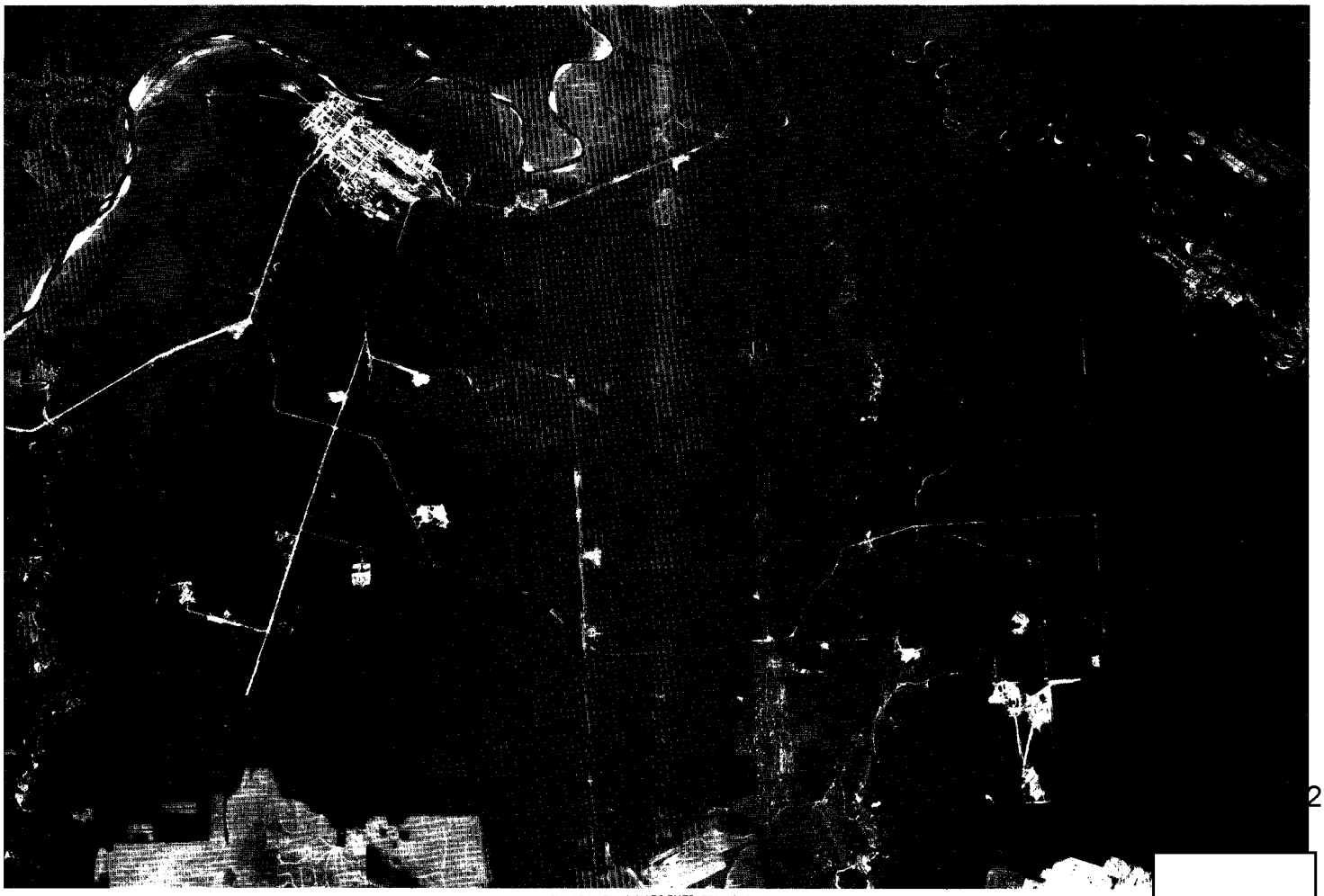

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FIGURE 6. CHAADAYEVKA HARDENED COMMAND FACILITY.

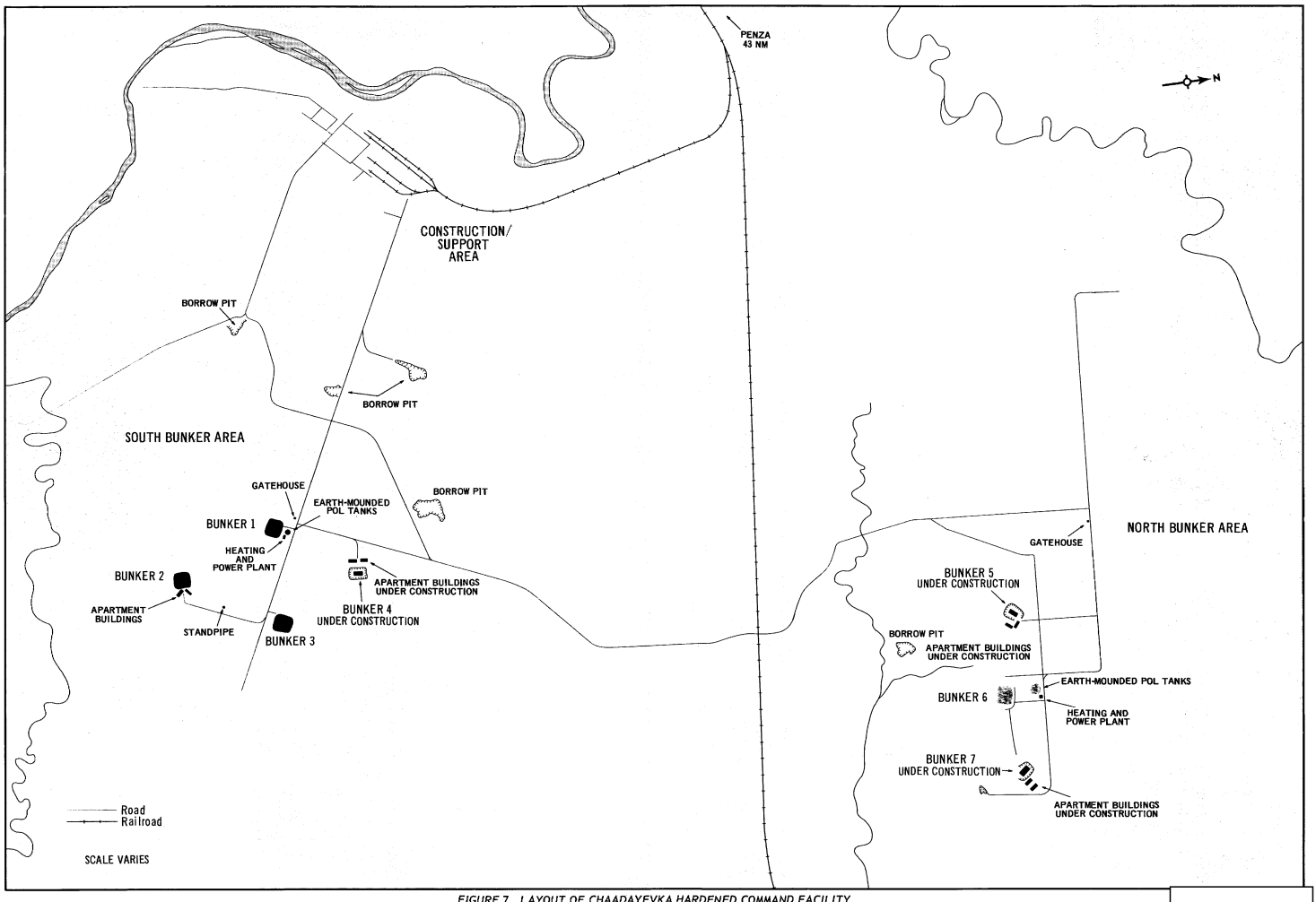

FIGURE 7. LAYOUT OF CHAADAYEVKA HARDENED COMMAND FACILITY.

FIGURE 8. CHAADAYEVKA BUNKER NUMBER 7.

tails are included in Table 1.

Within the Chaadayevka facility are several components which appear to be similar to components of the Sharapovo Central Command Facility near Moskva at 55-10-00N 037-33-30E. An illustrated description of the Sharapovo facility and the other known Central Command Operations or Headquarters Facilities were included in a previous NPIC report. 1/

Table 1. Chaadayevka Hardened Command Facility

Bunker Number (Keyed to Figure 7)	BUNKER DATA			APARTMENT DATA			Distance from Bunker To Apartment (in feet)	Remarks
	Type	Size (in feet)	Construction Status	Quantity	Size (in feet)	Construction Status		
1	Undetermined		Earth covered	No associated apartment building				A heating and power plant is near the bunker
2	Personnel		Earth covered	2	180 x 55	Under construction	200 to 250	See Figure 10
3	Undetermined		Earth covered	No associated apartment building				
4	Personnel		Being earth covered	2	180 x 55	Under construction	500	
5	Personnel		Under construction	2	180 x 55	Under construction	500	See Figure 9
6	Undetermined		Earth covered	No associated apartment building				A heating and power plant is near the bunker
7	Personnel		Under construction	2	180 x 55	Under construction	500	See Figure 8

The Chaadayevka Hardened Command Facility can not be negated on photography. The complex was first observed on at which time the rail facility was under construction. Construction activity at the north and south bunker areas was first observed on However, between no progress in construction could be observed. On Mission 2 additional bunkers designated 3 and 6 on Figure 7 were observed under construction. On the clearing for a fifth bunker, which is designated 5 on Figure 7, was observed and by photography a total of 7 bunkers were observed under construction. The construction/support facility and the construction of the 7 bunkers continued and on photography of , clearings for 8 apartment buildings were observed near 4 of the bunkers. This construction was continuing when the facility was last observed on

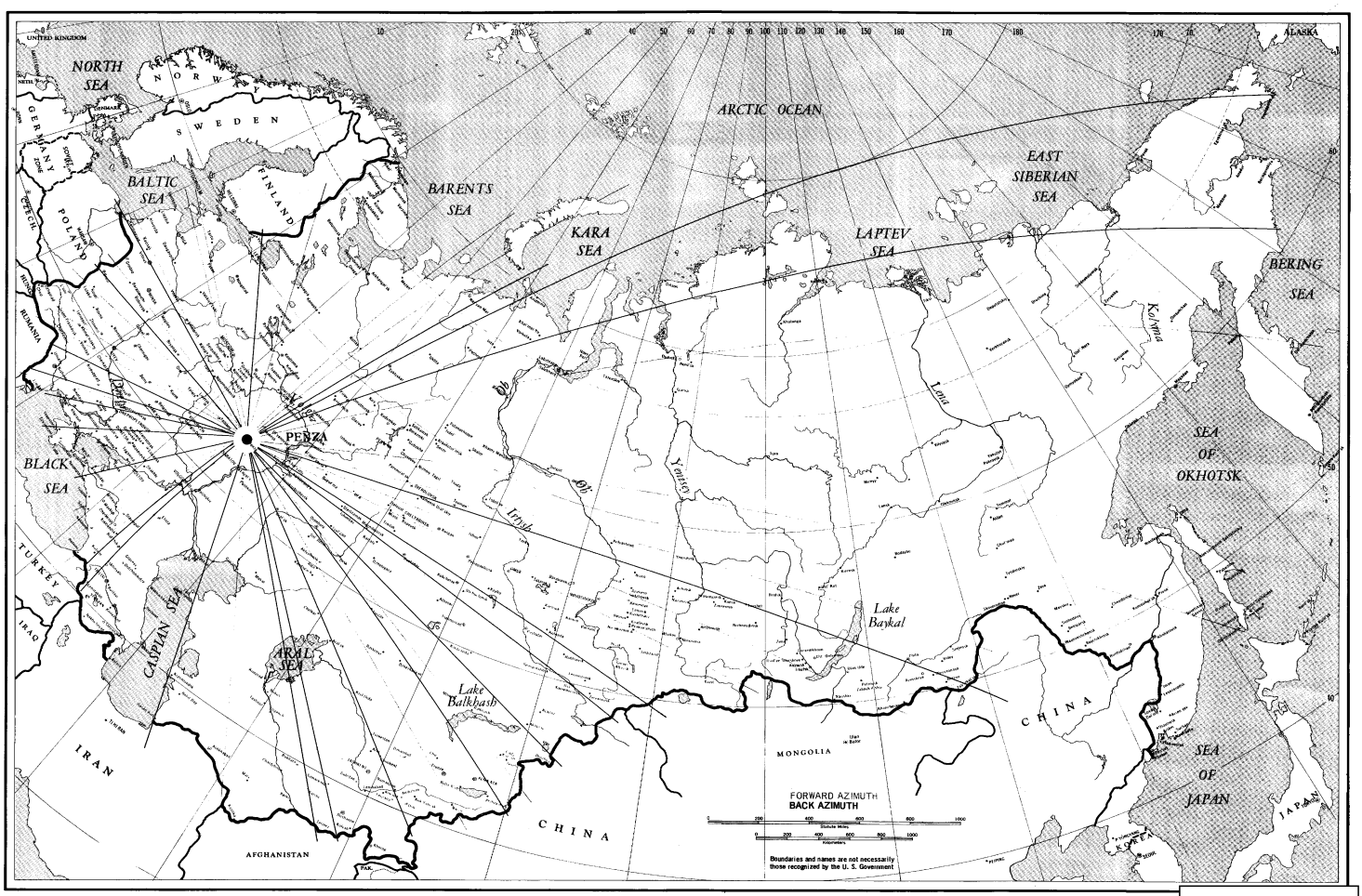

FIGURE 11. APPROXIMATE PROJECTIONS OF THE PENZA HF TRANSMITTING ANTENNAS.

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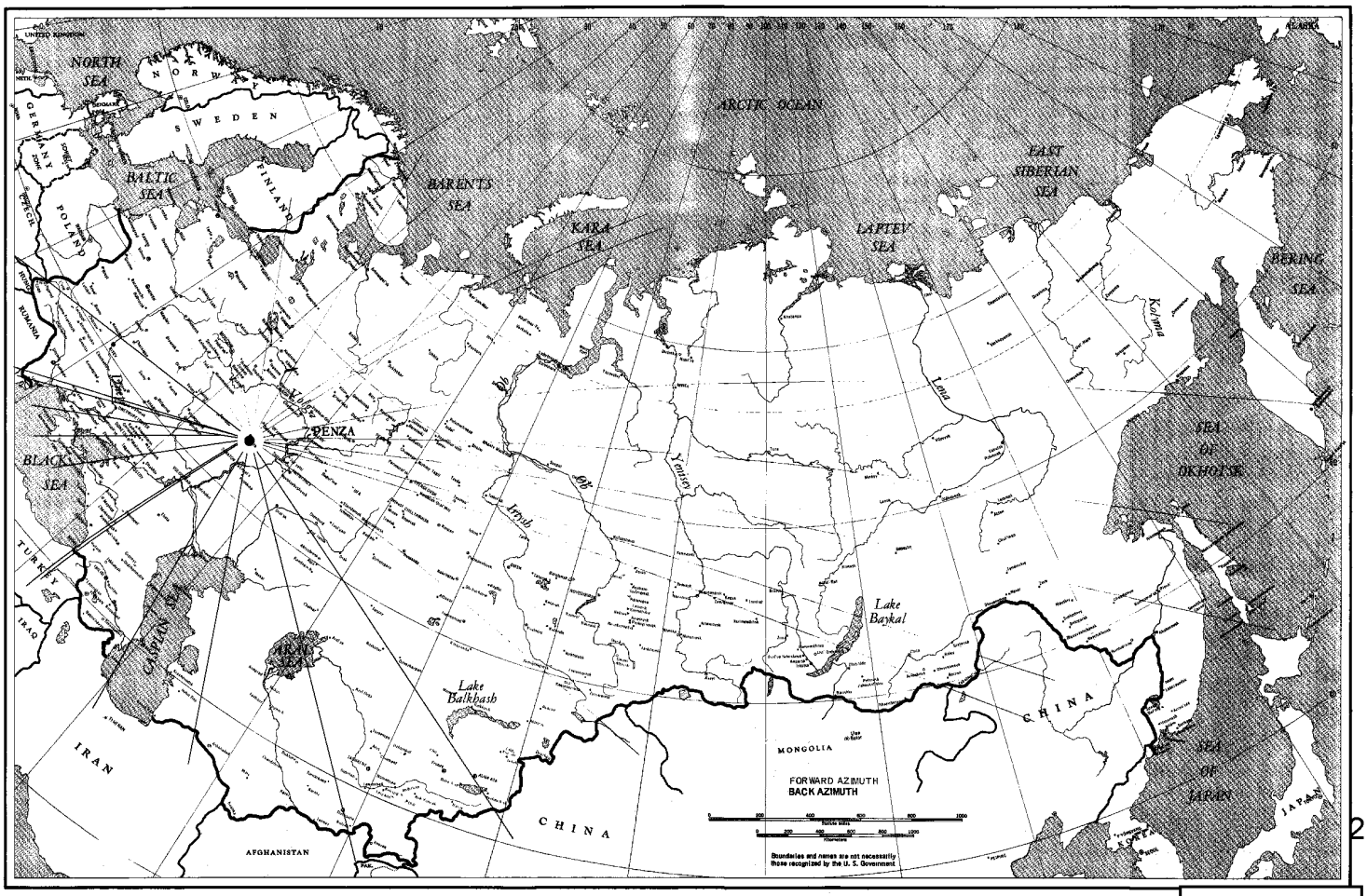

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FIGURE 12. APPROXIMATE PROJECTIONS OF THE PENZA HF RECEIVING ANTENNAS.

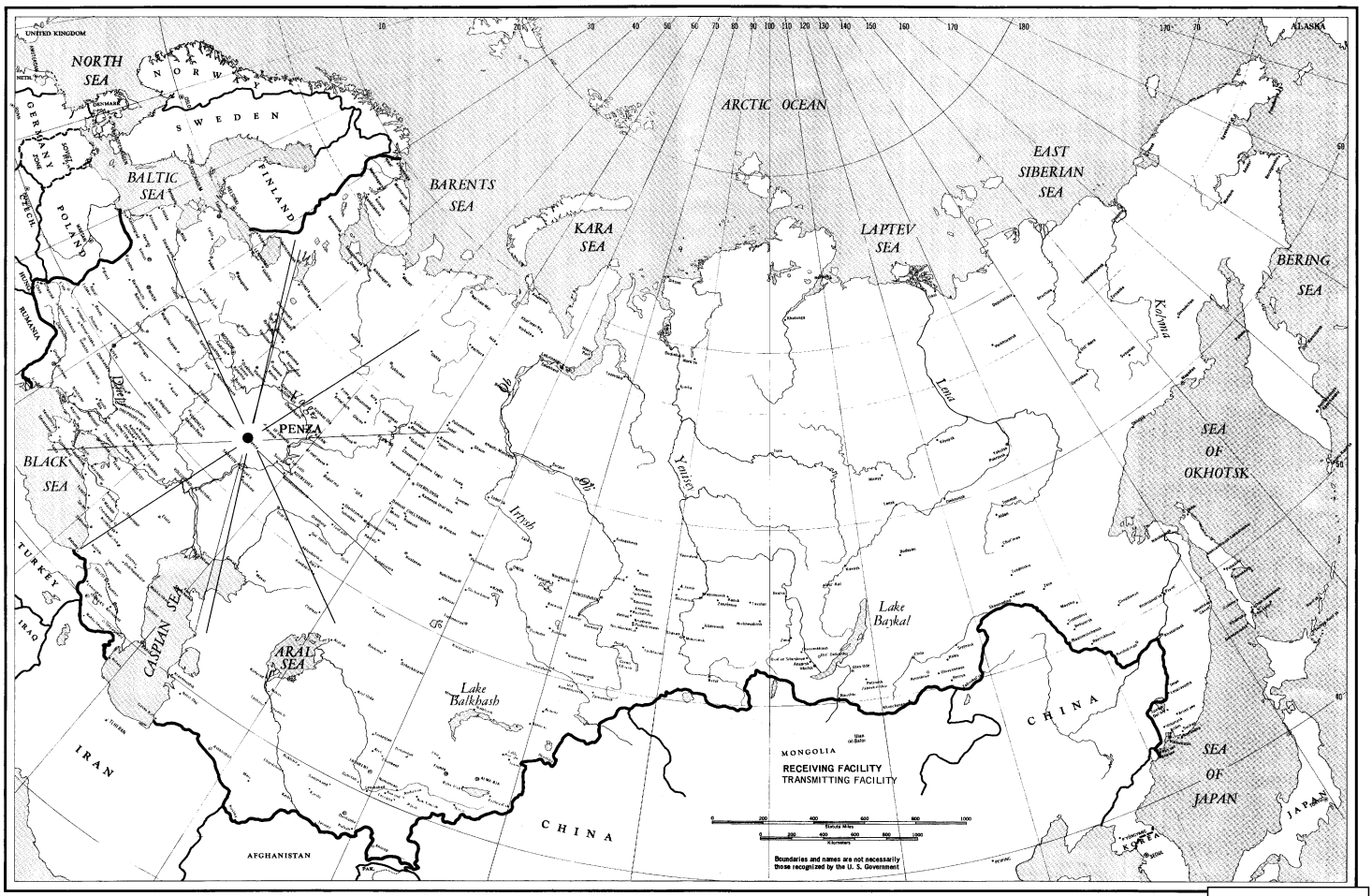
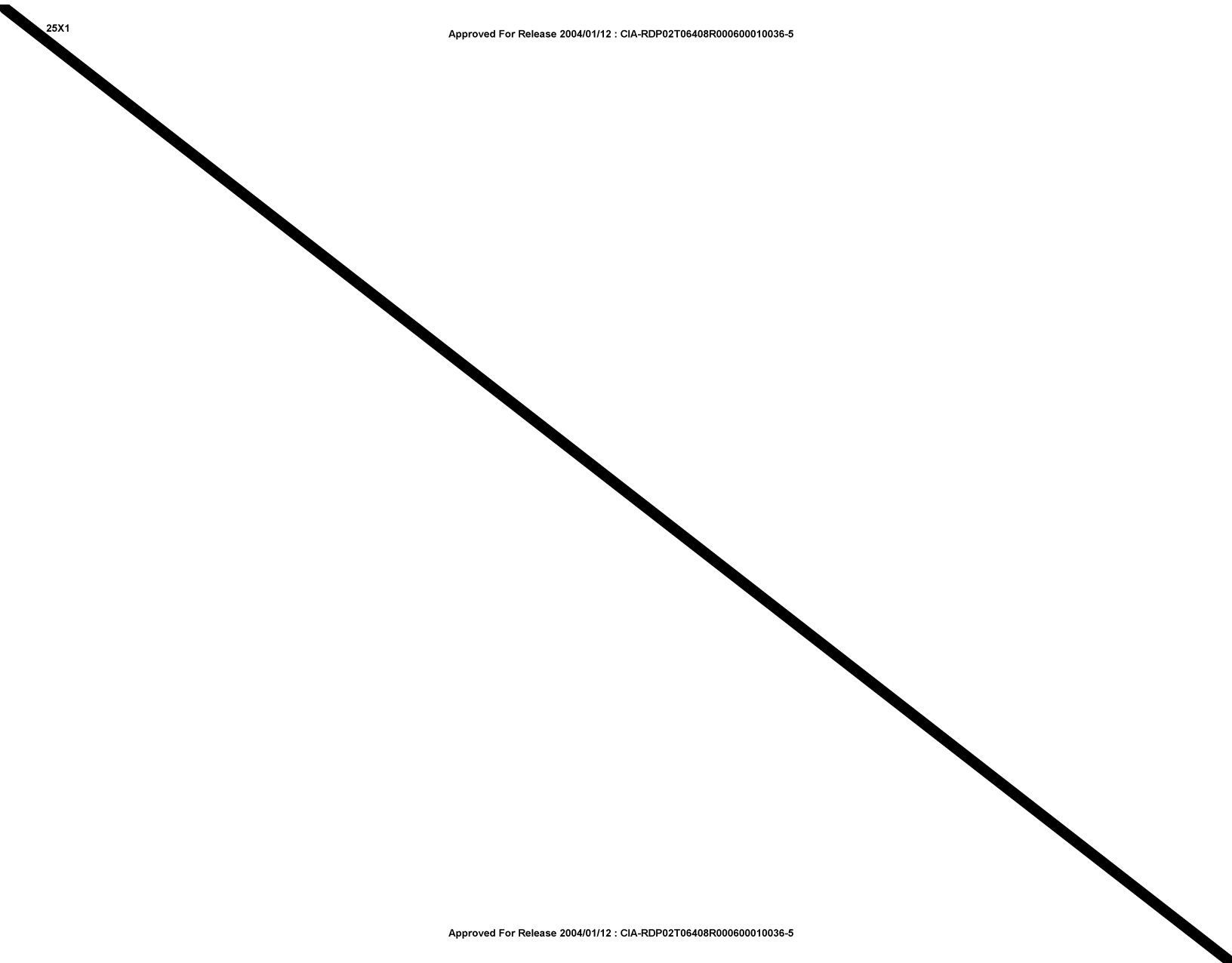


FIGURE 13. APPROXIMATE PROJECTIONS OF THE PENZA HARDENED (SUBSURFACE) ANTENNAS.



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MAPS OR CHARTS

SAC series, scale 1:200,000

SAC series, scale 1:100,000

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REQUIREMENT

NSA/P0432/R148-66

NPIC PROJECT

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